Comments of the Environmental Law and Policy Center, Environment Illinois Research and Policy Center, Vote Solar and the Union of Concerned Scientists
To the Illinois Commerce Commission
Regarding the Distributed Generation Valuation and Compensation Workshop
March 30, 2018

Vote Solar, the Environmental Law and Policy Center, Environment Illinois and the Union of Concerned Scientists appreciate the opportunity to submit comments to the Commission on the implementation of the Future Energy Jobs Act (FEJA) in a manner that will minimize overall system costs and maximize ratepayer benefits from investments in distributed energy resources. Indeed, within the past week the California Independent System Operator announced the cancellation of $2.6 billion in anticipated transmission investments due to load changes attributable to both energy efficiency and distributed solar. Likewise, implementation of the FEJA offers Illinois electricity customers significant benefits in the form of lower system costs, as well as benefits of substantial economic development and improved environmental quality. We are excited to work with the other stakeholders to maximize the promise of these technologies for Illinois.

Vote Solar is a non-profit organization working to foster economic opportunity, promote energy security and fight climate change by making solar a mainstream energy resource. Vote Solar has members across the nation with more than 500 residing in Illinois. ELPC is a not-for-profit organization that works to promote environmentally sound energy policies in Illinois and throughout the Midwest. Joining with citizens across the country, UCS combines technical analysis and effective advocacy to create innovative, practical solutions for a healthy, safe, and sustainable future. UCS has more than 500,000 supporters nationwide, including over 20,000 in Illinois. Environment Illinois Research & Policy Center is a non-profit organization dedicated to protecting air, water and open spaces in Illinois.

With the passage of the Future Energy Jobs Act (FEJA), the Illinois General Assembly adopted a policy to encourage the “adoption and deployment of cost-effective distributed energy resource
technologies and devices such as photovoltaics...”¹ In so doing, it listed a wide range of benefits that such technologies (hereinafter, DERs) offer the utility, its customers and the state. Those benefits include stimulating the economy, diversifying the resource mix and protecting the environment, as well as encouraging private energy investment.

To carry out this policy, FEJA includes a number of mechanisms for encouraging investment in DERs, among which is the rebate to distributed generation (DG) owners, intended to eventually replace net metering of distribution charges. At a minimum, that rebate must compensate DG owners for the value of the utility’s ability to control the associated smart inverter for reliability purposes during “distribution system reliability events.”² However, the law sets out a process for determining “additional uses” of the smart inverter that must be separately compensated, as well as for “valuing distributed energy resource benefits to the grid based on best practices, and assessments of present and future technological capabilities of distributed energy resources.” The law further explains that “the value of such rebates shall reflect the value of the distributed generation to the distribution system at the location at which it is interconnected, taking into account the geographic, time-based, and performance-based benefits, as well as technological capabilities and present and future grid needs.”³

Before addressing the specific questions posed by the Commission we want to underscore two critical, overarching challenges for the Commission and stakeholders:

A. Developing Full and Fair Values for DERs Rebates Will Take Time

The worthy goal of establishing a precise and fair methodology for valuing all of the legitimate benefits of DERs before meeting the legal threshold date for transitioning from net metering is on a collision course with the reality noted in the White Paper that, “Certain value elements are difficult or

¹ PA 099-0906 Section (1)(a)(1).
² 220 ILCS 5/16-107.6(b).
³ 220 ILCS 5/16-107.6(e).
impossible to quantify and most efforts to establish workable value of solar or value of distributed energy resource tariffs are emerging and nascent.” Many states are beginning the process of developing locational DER valuation methodologies, but even after several years of concerted efforts, leading states with much higher DER penetrations are currently just in the demonstration project phase of this work.

Faced with the need to develop a tariff while the precise science of geographically granular valuation methodologies remain under development, the Commission should consider establishing interim values as placeholders for system benefits that cannot yet be quantified with precision. Several states, including Minnesota⁴ and Maine⁵, and some utilities have done more general value of solar studies that could be instructive for developing the interim values. Existing value of solar analyses have been summarized by, among others, Jim Lazar for the Regulatory Assistance Project⁶.

As the science of DG and DER valuation progresses, Illinois will face the need to refine its own methodologies over time, and in the near term, will need to rely on less than perfect information. Given the overarching goal of FEJA to encourage deployment of DERs, we urge the Commission to adopt a principle that changes in compensation levels should be gradual and designed to avoid market disruption.

B. Developing Full and Fair Values for DERs Requires Increased Transparency and Significant New Data Sharing

In order to develop locational values, the utility must provide the Commission and stakeholders with critical data, updated on an ongoing basis. At least three types of data needs are required, including:

- A regularly updated hosting capacity analysis. It will be necessary that each utility understand and publicly communicate how much capacity is available on the distribution network, down to the level of individual substations, circuits, and nodes on each circuit. A hosting capacity analysis needs to include a determination of the capability of the distribution system to integrate specific quantities of DERs within thermal ratings, protection system limits and power quality and safety standards. Results of the analyses must be made available to the public in an accessible format that should include circuit level maps and downloadable data sets. Further, utilities need to assess how any planned investments within the subsequent 3 years impact the hosting capacity. The analysis should provide an assessment of the current level of deployment of specific DER technologies, including but not limited to solar photovoltaics or other DG, energy storage systems, plug-in electric vehicles, demand response or other load modifying resources, fuel cells and combined heat and power systems in their services territory and identify circuits that exhibit high levels of penetration. The utilities shall develop a process for regularly updating the hosting capacity analysis. A recent report by the Interstate Renewable Energy Council (IREC) provides guidance for state regulators on conducting hosting capacity analyses that describes new analytic tools used by utilities in states like California, New York and Minnesota to estimate the hosting capacity available on the distribution system for integrating DERs. The Minnesota Public Utilities Commission also required Xcel Energy to conduct an hosting capacity analysis for their service territory in Minnesota, which used a tool developed by the Electric Power Research

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Institute. ComEd’s sister company Pepco has also developed and published hosting capacity maps for its circuits in Maryland, Delaware, and New Jersey.

- DER Growth Projections: In order to evaluate the locational benefits and cost of DERs, it will be necessary that each utility have a detailed understanding of the growth trajectories of each type of distributed resource. Therefore, as part of its distribution planning process, each utility should develop long-term (10-year) scenarios that project the growth of DER technologies, including but not limited to solar photovoltaics, energy storage systems, and plug-in electric vehicles. The growth scenarios should also analyze expected geographic dispersion at the distribution circuit level and impacts on forecasted peak and minimum loads. The scenarios should include an expected growth case and a high and low growth case. The assumptions used in the scenarios shall be articulated as part of the distribution planning process.

- Grid Needs Assessment: One component of an ongoing distribution planning process is the preparation of an annual Grid Needs Assessment to be carried out by each utility in a manner that is transparent to consumers and DER providers. The annual Grid Needs Assessment should include identification of specific projects that could be deferrable through investments in DERs that minimize costs to consumers. Data that should be made available through the Grid Needs Assessment process should include:
  
  o Grid need type such as capacity, voltage/power quality, reliability, resiliency.
  
  o Location of the grid need including planning area, substation and feeder.
  
  o Magnitude, timing, duration and frequency of the need (e.g., 1 MW from 3-7pm, max 7 times per month from June-September, max 2 consecutive days).

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9 Online at: https://www.pepco.com/MyAccount/MyService/Pages/MD/HostingCapacityMap.aspx
- Planned upgrade (e.g. transformer replacement, reconductoring, line regulator) and its estimated cost.
- Reserve margin needed to provide buffer for contingency scenarios.
- Historical and forecasted data used to identify the grid needs such as load profiles, voltage profiles and reliability statistics.

**Specific Answers to the Questions Posed:**

a) Should the calculated values be limited to the value of distributed energy systems to the distribution network? If not, what other identifiable benefits of distributed energy systems should be included in the values calculated pursuant to Section 16-107.6?

As a first step, it will be very important to establish a process that attempts to identify and quantify all of the benefits of DER to the electricity system. Over the long term, each of these individual values may be valued and compensated through different policy mechanisms, including the DG rebate established pursuant to Section 16-107.6. This will require further evolution of DER policy, including the potential for FERC to establish market participation rules for compensating additional values of DER through wholesale markets. In the interim, the ICC should seek to ensure that DG systems are fairly compensated for the full suite of benefits that they provide to the system. This may require the Commission to establish some interim values as placeholders for system benefits that cannot yet be quantified with precision or cannot yet be compensated through other market mechanisms. As discussed above, the Commission should follow a policy of gradualism and interim steps to avoid unnecessary disruption or uncertainty in DG markets, which would undermine the legislative intent of FEJA.

In order to ensure that the Commission has the necessary data to ensure DG customers are fairly compensated, the Commission should attempt to quantify each of the following benefits of DERs:
1. Avoided capital costs for distribution and transmission upgrades (including capacity, voltage/power quality, and reliability/resiliency upgrades)

2. Avoided distribution operations and maintenance expenses

3. Avoided energy

4. Avoided generation capacity

5. Avoided ancillary services

6. Avoided transmission and distribution system losses

7. Avoided RPS integration costs

8. Avoided environmental impacts, including but not limited to emissions of greenhouse gases and criteria air pollutants.

c) How does each type of value that a distributed energy systems provide to the distribution network identified in part (b) vary geographically?

The value will vary by local load profiles and types of load as well as the characteristics of each circuit and substation. The data needs described earlier in this document will help to determine higher value geographies for siting of and compensation for DERs on the system.

d) How does each type of value that a distributed energy systems provide to the distribution network identified in part (b) vary across time?

The value that is provided across time will depend on local load profiles and changes to those profiles resulting from the performance of the DERs. Again, the data needs described earlier in the document will allow stakeholders to understand both current differences in the value of DERs based on when they provide local grid services, and how those conditions may change in response to anticipated changes in load. Importantly, the Commission should ensure that the compensation to individual DG owners for grid values is fixed at the time of system energization and does not fluctuate over time. The prospective value for new DG projects should change over time based on changed conditions on the
grid, but stable and transparent pricing for individual projects is necessary to ensure that DG owners can obtain financing for their investments.

The value for other benefits described above will vary over time in different ways. For example, the value of reducing CO2 emissions will change over time based on an increasing carbon price. Avoided energy will also vary over time based on changes in market prices due to a variety of factors, particularly increases in natural gas prices.

e) How does each type of value that a distributed energy systems provide to the distribution network identified in part (b) depend upon the distributed energy system technology?

The values that are provided will be determined by correlation of availability and performance of the specific resource (e.g. solar production profile, amount of energy storage, load shifting potential of DR) and the needs of the local distribution system. At some point in the near future, the Commission will need to address how valuation and compensation for solar systems coupled with storage will differ from stand-alone solar systems.

i) Considering available information, how should distributed generation energy resource benefits be calculated?

Illinois should establish an open process for creating and regularly updating a locational net benefits analysis tool. The tool would be used to set values for DERs and would be updated on a biannual basis to account for changes identified through the updated hosting capacity analysis, grid needs analysis and DER growth projections. Interim values will be used as placeholders for not-yet known or quantifiable values. The updating process would allow for a gradual shift in values over time to move toward the most accurate rebate possible while providing market stability.

Illinois can look to its own energy efficiency stakeholder advisory group (SAG) as an example of how such a process might take shape. Any interested party may participate in the SAG, and parties may
contribute the services of technical experts to review data and refine how the cost-effectiveness of particular programs and efficiency measures are evaluated over time. Similarly, a stakeholder process for the DER rebate determination should allow broad participation from any interested party, but should be structured such that parties can opt to participate for the purpose of building consensus on broad policy questions, or to contribute technical resources to review data and attempt to reach consensus on DER values on an ongoing basis. This process both minimizes the number of contested issues brought before the Commission during the tariff proceeding, and creates a firmer shared foundation for understanding whether the policy is achieving the goals for which it was passed, and addressing challenges as they arise.

Similarly, the Minnesota Department of Commerce conducted an excellent value of solar stakeholder process that could be a model for Illinois.

Illinois should establish a budget for the stakeholder group to accomplish its goal of creating and maintaining the valuation methodologies and calculations. The budget could pay for facilitation services as well as technical services. The White Paper pointed out that the California utilities jointly engaged E3 to create a locational net benefits analysis tool which is currently being tested in demonstration projects in advance of a full roll out. Illinois stakeholders may wish to engage a firm to create a similar tool. The budget for both facilitation and technical resources should be capped at a level determined by the commission to be adequate to perform the necessary tasks.

Finally, again the Commission should recognize that establishing precise and granular calculation methodologies will take time. In the interim, it is critical to avoid market disruption that can come from signaling uncertainty about future values or sudden drastic changes in rebate values.